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SOME NEW SPECIES OF LEUCADENDRON

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ABSTRACT

This paper contains descriptions of four species of *Leucadendron*. *L. laxum* is a species close to *L. corymbosum* Berg. and abundant in the Bredasdorp Division. *L. loeriense* is from the mountains of the Humansdorp Division. *L. nobile* also from the Humansdorp Division is a striking shrub up to 12 feet high with needle-like leaves, apparently confined to one small area. *L. singulare* from the summit of the Mannetjesberg in the Uniondale Division, is in some ways a rather unusual species. It has been necessary to propose a new combination in order to complete the description of *L. nobile*.

Leucadendron teretifolium (Andr.) Williams comb. nov.

Protea teretifolia Andrews Bot. Rep. 7: 461 (1807).

Chasme teretifolia Salisb. ex Knight Prot. 16 (1809).

Leucadendron abietinum R. Br. in Trans. Linn. Soc. 10: 64 (1810).

LECTOTYPE. Plate 461 in Andr. Bot. Rep. (1807).

Andrews' plate shews two enlarged male flower heads on the same plant as the mature female cone. The artist was evidently trying to imagine the appearance of the female head when in bloom. The small figure below shews the correct male inflorescence. According to Knight Prot. 16 (1809) this plant was introduced by Mr. J. Niven. Niven's collection No. 62 (LINN) is No. 156-8 in Smith's Herbarium.

Leucadendron laxum Williams. sp. nov. (Proteaceae) affinis *L. corymboso* Berg. sed ita differt caules foliis capitulisque parviores, rami laxi non rigidi, folia caulina erecto-patens, pili apicales bractearum masculinarum minus quam 1 mm longi, anthera ad apicem nigra.

Shrubs up to 1.5 m, erect, a single stem at ground level, many short foliaceous branches at the base, flowers numerous, borne on the erect branches in scattered groups. *Branches* tomentose, purplish, slender, slightly stouter in the female, not hidden by the leaves. *Branchlets* numerous, very slender, short usually



PLATE 1.
L. laxum ♂ habit.

occurring in groups at intervals on the main branches. *Foliaceous branchlets* very slender, lax, with a few weak hairs. *Leaves* acicular, almost oval in cross-section, glabrous, sparsely villous when young, patulate-erect, mucronate, evenly spaced, males up to 13.5 mm long and 1.25 mm diam, females up to 17.5 mm long and 1.3 mm wide, much smaller on branchlets, more slender on the lower foliaceous branchlets. *Male Inflorescence* numerous, exceeding the leaves, solitary or sometimes 3-nate at the ends of short or very short groups of branchlets, depressed globose, about 6 mm long and 9 mm diam, peduncle 5 mm long. *Basal bracts* narrowly lanceolate, glabrous, ciliate, about 5 mm long, about 20 in number mostly grouped at the base of the peduncle, a few smaller scattered above. *Floral bracts* 1.5 mm long, 1 mm broad, ovate, hollow, translucent, glabrous, ciliate, apical cilia less than 1 mm long. *Floral bud* 4.25 mm long, slightly bent, pubescent, yellow and glabrous above. *Perianth tube* terete, pubescent, 2 mm long. *Claw* pubescent, recurved 90—120°, 1.5 mm long. *Limb* glabrous, spatulate, 1.25 mm long. *Anthers* erect, curled

upwards, .75 mm long, connective dark brown visible at the apex as a minute dark spot. *Pollen* triangular in polar view with straight sides and blunt angles, sides .035 mm long, polar thickness .02 mm. *Style* filiform, glabrous, 3.5 mm long. *Stigma* abortive, clavate, minutely cleft, 0.6 mm long, acts as a pollen presenter. *Hypogynous scales* filiform, 1.5 mm long. *Female Inflorescence* solitary, at the ends of groups of short branchlets, exceeding the leaves, conical with about 12 small flowers in the flattened apex. *Basal bracts* the lowest leaf-like but broader and ciliate at the base, becoming lanceolate, acute, villous, ciliate, about 6.5 mm long and 2 mm broad arising from the pubescent lower sides of the head, about 18 in number. *Floral bracts* lingulate, acute, recurved and glabrous above, thickened and densely pubescent below, lanceolate, weakly ciliate, 5 mm long, 3.5 mm broad. *Floral buds* villous, straight, green, 6 mm long. *Perianth tube* transversely compressed, villous, glabrous and divided below, 3.5 mm long. *Claw* villous, recurved about 90°, 1 mm long. *Limb* linear, glabrous above, 1 mm long. *Staminodes* 0.3 mm long, absent from the anterior



PLATE 2.
L. laxum ♀ habit.

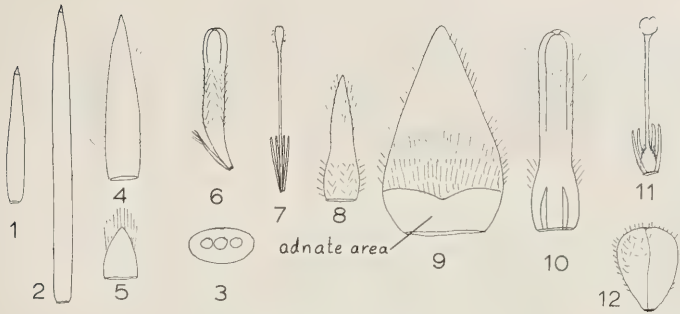
segment. *Ovary* ovoid, densely clothed in thick watery hairs, .75 mm long, 0.5 mm broad. *Style* glabrous, straight, narrowing slightly below, 3.5 mm long. *Stigma* terminal, truncate, somewhat cleft, .5 mm broad. *Hypogynous scales* linear, 1.5 mm long. *Mature female cone* ovoid, pubescent, the acute glabrous elevated apices of the bracts are conspicuous, 20 mm long and 14 mm diam. *Fruit* a nut, biconvex, obovoid, tapering to the base, fringed with short hairs, anterior surface mottled, posterior surface divided vertically by a low ridge, 5 mm long, 3.5 mm broad.

CAPE PROVINCE. Bredasdorp Division; Karsrivier, Ludwig 15 (NY, PRE, SAM). Near Bredasdorp, *L. Bolus* (BOL 20574), *Galpin* 10475 (K, P, PRE), Codd 9936 (K, NBG, PRE), *Garside* 4674 (K), *Muir* 5205, 5206 (PRE, NBG), *Acocks & Halfstrom* 2103 (PRE, S), *Breach* SAM (51338). The Poort, *Leighton* (BOL 21109), *Compton* 4388 (BOL), *Acocks* 1546 (S). Agulhas, *Ecklon* s.n. (P), *Marloth* 10016 (PRE). Near Elim, *Schlechter* 7617 (GRA). *H. Bolus* 7856 (BOL, K), *Compton* 19001 (NBG), 22635 (BOL, NBG), *Leighton* 2559 (NY), *Henderson* 1818 A (NBG). Elandskloof, *Ecklon* s.n. (P), *Jordaan* 936 (STE). Baardscheedersbos, *Gill* 100, 128 (NBG), *Thomas* s.n. (NBG), *Van Breda* 718 (PRE), *Stokoe* (SAM 65176), *Williams* 63 (NBG). Stanford/Elim *Barker* s.n. (BOL), *Gillett* 4356 (PRE). Avoca, *Williams* 286 (Holotype) (NBG). Caledon Division; Hermanus, *Patterson* s.n. (BOL). Stanford, *Wood* s.n. (NBG), *Williams* 78 (NBG).

Leucadendron laxum was collected first by Baron von Ludwig in the "Ruggens near Karsrivier" in the Bredasdorp District and subsequently by many others. Geographically it is found only in an area extending from Stanford to Bredasdorp which is quite far removed from that of *L. corymbosum* Berg which occurs in the vicinity of Paarl, Wolseley and Malmesbury. Although very close to *L. corymbosum* it differs in the following ways: 1. being smaller in many ways i.e. the stems are shorter and more slender, the leaves are shorter and narrower, the male flower heads are smaller; 2. the branches are lax and not rigidly erect; 3. the stem leaves are less erect; 4. the apical bristles on the male floral bract less than 1 mm long; 5. the connective dusky, providing the anther with a small black apex.

***Leucadendron loeriense* Williams sp. nov.**

Frutex 60 cm altus, ad basim 1-caulis, rubescens; *rami* laxi, erecto-villosi; *folia* 3.0—3.5 cm longa, 3.5—5.5 mm lata, anguste-oblonga, semi-patula, atroviridia, ubique erecto-pubescentia, ad apice sub-acuta obtusi-mucronulata, ad basim torta; *folia involucralia* conferta, anguste lanceolata, albescentia, apices versus contracta acuta, capitulum excedens; *inflorescentia mascula* 1.5 cm longa, 1.2 cm diam, ovoidea; *bracteola* 1.5 mm longa, 1 mm lata, ovalis, ciliata; *tubus perianthii* 1.5 mm longus, pubescens; *unguis* 1.5 mm

FIG. 1. *L. laxum*.

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| 1. a male leaf $\times 2.5$. | 8. a female basal bract $\times 2.5$. |
| 2. a female leaf $\times 2.5$. | 9. a female floral bract $\times 5$. |
| 3. section of a leaf $\times 10$. | 10. a female bud $\times 5$. |
| 4. a male basal bract $\times 5$. | 11. a female pistil with hypogynous scales $\times 5$. |
| 5. a male floral bract $\times 5$. | 12. a fruit $\times 2.5$. |
| 6. a male bud with bract $\times 5$. | |
| 7. a male sterile pistil with hypogynous scales $\times 5$. | |

longus, pubescens; *limbus* 1.5 mm longus, glaber; *anthera* 1.3 mm longa, decumbens; *pollen* aspectu polari triangulare .029 mm latum, altitudine polari .020 mm; *stylus* 3 mm longus, glaber; *stigma abortivum* 1.3 mm longum, clavatum; *squama hypogyna* 1.3 mm longa, subulata; *receptaculum* 1.3 cm longum, 3.5 mm diam, cylindricum; *inflorescentia femina* 1.3 cm longa, 1 cm diam, ovoidea; *bracteola* 2.5 mm longa, 5 mm lata, late ovalis, dense brevi-pubescens, ciliata; *tubus perianthii* 2.5 mm longus, pubescens. ad basim glaber et divisus; *unguis* .75 mm longus, pubescens; *limbus* .75 mm longus, glaber; *staminodium* .5 mm longum, anticum saepe absens; *ovarium* .75 mm longum, bilobatum, glabrum; *stylus* 3 mm longus, glaber; *stigma* .5 mm latum, truncatum, sub-obliquum; *squama hypogyna* 1.3 mm longa, lata, obtusa; *receptaculum* 1.2 cm longum, 2.5 mm diam, anguste conicum; *strobilus* femineus maturus 2.5 cm longus, 2.0 cm diam, globosus; *samara* 6 mm longa, 5 mm lata, fusca, foveolata, emarginata, ad apice alata.

Shrubs rather low, 60 cm after 2 years, tinged with red, fairly densely branched from a single stem below, with few erect stems. *Branches* lax, purplish, somewhat slender, villous. *Leaves* narrowly-oblong, semi-patulate, dark green, covered on all sides with a velvety erect pubescence, apex sub-acute with a small blunt mucro, twisted and narrowed at the base, subequal in the two sexes, 3.0—3.5 cm long, 3.5—5.5 mm broad. *Involucral leaves* crowded, narrowly lanceolate, greenish white, becoming glabrous on the inner surface and decreasing in size towards the head, tapering to a small blunt mucro at

the acute apex, about 16 in number, forming a starlike cup around and exceeding the head. *Male Inflorescence* solitary, terminal, conical when in bud, 1.5 cm long, 1.2 cm diam, flowers arranged in 21 ascending spiral rows. *Basal bracts* ovate, acute, glabrous, ciliate, 5 mm long, 3 mm broad about 6 in number. *Floral bract* oval, ciliate, sparsely pubescent on the upper part of the midrib, 1.5 mm long, 1 mm broad. *Floral bud* 4.5 mm long, glabrous at the apex and base, otherwise pubescent, apex somewhat enlarged, standing in a tuft of hairs. *Perianth tube* 1.5 mm long, pubescent above, glabrous below. *Claw* 1.5 mm long, pubescent, recurved more than 90°. *Limb* 1.5 mm long, glabrous above, pubescent at the base, oblong. *Anther* 1.3 mm long, decumbent. *Stigma* abortive, 1.3 mm long, clavate, acts as a pollen presenter. *Style* 3 mm long, glabrous, narrower above. *Hypogynous scales* 1.3 mm long, subulate, yellow. *Nectar* seen at the apices of the Hypogynous scales in the throat of the perianth tube. *Pollen* triangular in polar view with obtuse apices, sides .029 mm long, polar thickness .020 mm. *Receptacle* 1.3 cm long, 3.5 mm diam, cylindrical. *Female*



PLATE 3.
L. loeriense habit.



PLATE 4.
L. singulare habit.

Inflorescence solitary, terminal, with or without a colourful involucre, ovoid, 1·3 cm long, 1 cm diam, with flowers in 8 ascending spirals. *Basal bracts* similar to the male. *Floral bract* 2·5 mm long, 5 mm broad, broadly oval, densely short pubescent in the upper two thirds, glabrous across the base, ciliate. *Floral bud* 4·5 mm long, transversely flattened, rounded and glabrous above, divided and glabrous below, mid section pubescent. *Perianth tube* 2·5 mm long, weakly fused, pubescent above, glabrous and divided below. *Claw* ·75 mm long, pubescent, recurved 145° and more. *Limb* ·75 mm long, glabrous, posterior much thickened at the apex, anterior flattened. *Staminodes* ·5 mm long, anterior usually absent. *Ovary* ·75 mm long, glabrous, bilobed above. *Stigma* ·5 mm broad, truncate, sub-oblique. *Style* 3 mm long, glabrous, narrower below. *Hypogynous scales* 1·3 mm long, yellow, broad, tapering, obtuse. *Nectar* seen at the apices of the hypogynous scales and in the throat of the perianth tube. *Receptacle* 1·2 cm long, 2·5 mm diam, narrowly conical. *Mature*

female head a cone 2.5 cm long, 2.0 cm diam, globose, with bracts reddened and glabrous above, densely pubescent across the middle. *Fruit* a samara, 6 mm long, 5 mm broad, compressed, black, pitted, ribbed on the inside, emarginate and winged above.

CAPE PROVINCE. Humansdorp Division, Loerie Forest Reserve, *Williams* 962 (Holotype) (NBG), 454 (NBG). Otterford Forest Reserve, *Middelmann* 5 (NBG). Mac Peak, Baviaanskloof Mts., *Taylor* 941b (NBG). Uitenhage Division, Cockscomb, Great Winterhoek Mts., *Esterhuysen* 27110 (BOL), 28022 (BOL).

The species here described was grown at Hermanus from the seed collected (29/6/64) at Loerie Forest Reserve on the Van Stadensberg. They were sown on the 3/8/64, planted out on the 8/3/65 and bloomed for the first time on the 20/11/66 continuing in bloom throughout December and into January. *L. loeriense* can be distinguished from *L. uliginosum* R. Br. by being a low shrub and never tall, by having leaves with an erect and not adpressed pubescence, by having a reddish and not a silvery tinge and by having fruits that are broadly not narrowly winged towards the apex. *L. radiatum* Phill. & Hutch. has leaves that are very much more twisted. Just as *L. floridum* R. Br. is a far Western relative of *L. uliginosum* R. Br. so *L. loeriense* is its far Eastern congener. *L. loeriense* is insect pollinated having nectar, a conspicuous involucre, a pollen presenter in the male and a very small stigmatic surface in the female.

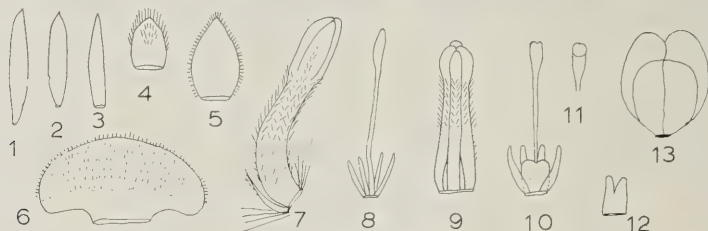


FIG. 2. *L. loeriense*.

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|---|---|
| 1. a male leaf half size. | 9. a female bud $\times 5$. |
| 2. a female leaf half size. | 10. posterior view of a female pistil with hypogynous scales $\times 5$. |
| 3. a male involucral leaf half size. | 11. anterior view of the stigma $\times 5$. |
| 4. a male floral bract $\times 5$. | 12. anterior hypogynous scales (occasionally connate) $\times 5$. |
| 5. a male basal bract $\times 2.5$. | 13. fruit $\times 2.5$. |
| 6. a female floral bract $\times 5$. | |
| 7. a male bud $\times 5$. | |
| 8. a male abortive pistil with hypogynous scales $\times 5$. | |

***Leucadendron nobile* Williams sp. nov.**

Frutex 3 m altus, erectus; *rami recti*, glabri; *folia teretia* glabra, mucronata, maribus ad 3.2 cm longis, feminis ad 5.8 cm longis; *inflorescentia masculina*

3.3 cm longa, 1 cm diam, solitaria, terminalis, spicata, glabra, pedunculata; *bracteola* glabra; *perianthii tubus* 1 mm longus, glaber; *unguis* 3 mm longus, glaber; *limbus* 2 mm longus, glaber; *anthera* 1.5 mm longa; *stylus* 4 mm longus, glaber; *stigma abortivum* 1.5 mm longum, bifidum, clavatum; *squamae hypogynae* 1 mm longae, crassae; *receptaculum* 2.5 cm longum, 1.5 mm diam, anguste cylindricum; *inflorescentia feminea* 2.8 cm longa, 1.2 cm diam, solitaria, terminalia, anguste ovoidea, pedunculata; *bracteola* 2.5 mm longa, 4.2 mm lata, glabra; *perianthii tubus* 2.5 mm longus, compressus, sparsim pubescens; *unguis* 1.2 mm longus, sparsim pubescens; *limbus* 1 mm longus, glaber; *staminodium* .5 mm longum; *filamentum* distinctum ad apicem; *ovarium* .7 mm longum, ovoideum, glabrum; *stylus* 3 mm longus, glaber; *stigma* .3 mm diam, obliquum; *squamae hypogynae* 1 mm longae, crassae; *receptaculum* 2 cm longum, 5 mm diam; *strobilus maturus* 4—9 cm longus, 2.4—3.9 cm diam, glaber; *samara* 7 mm longa, 6 mm lata, cordata, emarginata, anguste alata. Species proprissima propter altitudinem folia longa teretia capitulaque pedunculata.

Shrubs up to 4 m, single stemmed at the base but branching immediately into several stout erect stems with a smooth light grey bark; males not as robust but more branched. *Branches* straight, erect, stout in females, often purplish. *Leaves* terete, glabrous, mucronate, slightly grooved on the upper surface, semi-patulate, males up to 4.1 cm long and 1.2 mm diam, females up to 5.8 cm long and 1.5 mm diam. *Involucral leaves* similar to the stem leaves, pale green to ivory in colour, not much crowded, not concealing the head. *Male Inflorescence* 4 cm long and 1 cm diam, solitary, terminal, spicate, glabrous, pedunculate, exhaling an unpleasant odour. *Basal bracts* clothing the peduncle, 5 mm long and 1.2 mm broad, glabrous, short ciliate, swollen at the base, tapering to the acute apex, about 30 in number. *Floral bracts* 1.3 mm long and 1.3 mm broad, acute, short ciliate standing with the floret on a swollen base. *Floral bud* 5 mm long, straight, erect, glabrous except for a few short hairs, green, not much swollen at the apex. *Perianth tube* 1 mm long, glabrous except for a few short hairs on the lateral segments. *Claw* 3 mm long, glabrous, recurved 180°. *Limb* 2 mm long, glabrous, hollow. *Anther* 1.5 mm long, curling upward. *Abortive stigma* 1.5 mm long, clavate, often minutely bifid, acts as a pollen presenter. *Style* 4 mm long, glabrous. *Hypogynous scales* 1 mm long, stout, pale yellow, exuding nectar at the apex. *Pollen* triangular in polar view with sides .03 mm long, polar depth .02 mm. *Receptacle* 3.5 cm long and 1.5 mm diam, narrowly cylindrical. *Female Inflorescence* 2.8 cm long and 1.2 cm diam, solitary, terminal, elongated-ovoid, exhaling an unpleasant musty odour, growing in length as the florets open progressively towards the apex, with the florets arranged in 13 ascending spirals of about

11 in each, with a stout peduncle 8 mm long. *Basal bracts* 7 mm long and 2·5 mm broad, caudate, glabrous, short ciliate, imbricating the peduncle, about 34 in number. *Floral bracts* 2·5 mm long and 4·2 mm broad, broadly oval, glabrous, sparsely short ciliate, connate towards the base. *Floral bud* 4·7 mm long, compressed, tapering to the blunt glabrous apex, sparsely pubescent. *Perianth tube* 2·5 mm long, compressed, sparsely short pubescent. *Claw* 1·2 mm long, sparsely short pubescent, recurved 90°. *Limb* 1 mm long, glabrous. *Staminode* ·5 mm long. *Filament* distinct from the perianth segment above. *Ovary* ·7 mm long, ovoid, glabrous. *Style* 3 mm long, glabrous. *Stigma* ·3 mm diam, oblique. *Hypogynous scales* 1 mm long, stout, pale yellow. *Nectar* secreted from the apex of the scale is transferred to the throat of the perianth tube in the groove at the junction of the adjacent perianth segments. *Receptacle* 2 cm long and 5 mm diam, cylindrical. *Mature female head* cone-like, indehiscent, 4—9 cm long and 2·4—3·9 cm diam, with many closely spaced glabrous bracts arranged in three



PLATE 5.
L. nobile ♂.

adnate spirals. *Fruit* a samara, 7 mm long and 6 mm broad, narrowly winged, dusky or mottled, flat, heart shaped, emarginate.

CAPE PROVINCE. Humansdorp Division, Guerna Kop South slopes 1,500—2,000 ft, *Vogts* 381 (PRE), *Williams* 722 (NBG), 982 (NBG (Holotype), BOL, STE, K, PRE), *Rourke* 619 (NBG).

Leucadendron nobile was first collected by Mrs. Marie M. Vogts (381 PRE) on the south slopes of Guerna Kop in the Humansdorp Division in May 1965 and up to now it has not been seen anywhere else. It is locally abundant and has fortunately escaped burning for many years, becoming a tall striking shrub with its needle like leaves and reddish cones seen at the tops of the branches against the blue sky. *Protea neriifolia* R. Br. and a very good red form of *P. repens* L. are extremely frequent in this area which also has a large cycad population. Being possessed of nectar, perfume, a pollen presenter in the male and a very small stigma in the female there can be no doubt that *L. nobile* is insect pollinated. It grows on steep dry gravelly T.M.S. south slopes flowering in December



PLATE 6.
L. nobile ♀.

although one or two male flowers can be found as early as October and as late as March. *L. nobile* is easily distinguished from all other species of *Leucadendron* by its tall habit, long needle-like leaves and pedunculate heads. It is closest to *L. teretifolium* (Andr.) Williams comb. nov. (*L. abietinum* R. Br.) which is in every way smaller and to *L. muirii* Phillips which, growing on limestone, has thick broad leaves.

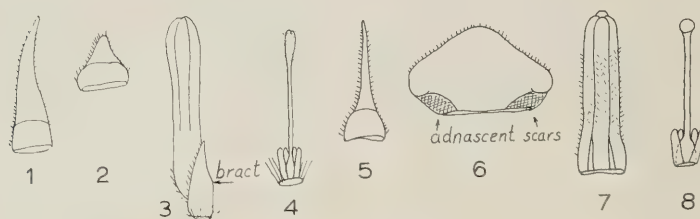


FIG. 3. *L. nobile*.

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|---|---|
| 1. a male basal bract $\times 5$. | 5. a female basal bract $\times 2.5$. |
| 2. a male floral bract $\times 5$. | 6. a female floral bract $\times 5$. |
| 3. a male floral bud with bract $\times 5$. | 7. a female floral bud $\times 5$. |
| 4. a male pistil with hypogynous scales
$\times 5$. | 8. a female pistil with hypogynous scales
$\times 5$. |

***Leucadendron singulare* Williams sp. nov.**

Frutex 30 cm altus, humilis, argenteus; *rami* breves, graciles, breviter adpresso-pubescentes; *folia* 1.6 cm longa, 2.5 mm lata, linear-oblongolata, argentea, adpresso-pubescentia; *inflorescentia masculina* 1.2 cm diam, globosa; *bractea basalis* 4 mm longa, 2.5 mm lata, late lanceolata, acuta, ciliata, breviter pubescens, numerosa; *bracteola* 3 mm longa, 1 mm lata, lanceolata, acuta, ad apicem caespitosa; *perianthii tubus* 1.5 mm longus, fere glaber; *unguis* 2 mm longus, dense pubescens; *limbus* 1.5 mm longus, dense pubescens; *anthera* 1 mm longa; *stylus* 3.5 mm longus, ad basim pubescens; *stigma abortivum* .8 mm longum, clavatum, minute bifidum; *squamae hypogynae* 1 mm longae, aciculares; *receptaculum* 4 mm diam, globosum; *pollen* aspectu polari triangulare .032 mm latum, altitudine polari .020 mm; *inflorescentia feminea* 14 mm longa, 18 mm diam, globosa, solitaria, terminalia; *bractae basales* similes maribus, interiores latiores; *bracteola* 5 mm longa, 6.5 mm lata, late ovalis, apiculata, pubescens, longe ciliata; *perianthii tubus* 4 mm longus, pubescens, ad basim glaber et divisus; *unguis* 2 mm longus, pubescens; *limbus* 1 mm longus, pubescens; *staminodium* .7 mm longum; *ovarium* 1 mm longum, ovoideum, pubescens; *stylus* 4 mm longus, glaber; *stigma* .5 mm diam, truncatum, terminalia; *squamae hypogynae* 2 mm longae, aciculares; *receptaculum* 5 mm

diam, globosum; *strobilus maturus* 17 mm diam, globosus, pubescens; *nucula* 4.5 mm longa, 3.5 mm lata, obovoidea, sparsim breve pubescens.

Shrubs up to 30 cm, decumbent and spreading over rocks with a silvery hue. *Branches* short, slender, short adpressed pubescent when young. *Leaves* 1.6 cm long and 2.5 mm broad, oblanceolate-linear, narrowing somewhat towards the base, with a small blunt mucro at the subacute apex, covered on all sides by a short and dense adpressed pubescence. *Involucral leaves* similar to the stem leaves, not coloured but somewhat more crowded, not concealing the head. *Male Inflorescence* 1.2 cm diam, globose, solitary, terminal. *Basal bracts* 4 mm long, 2.5 mm broad, broadly lanceolate, acute, ciliate, shortly pubescent, about 30 in number. *Floral bracts* 3 mm long and 1 mm broad, lanceolate, acute, ciliate and tufted with hairs at the apex. *Floral bud* 4.5 mm long, densely pubescent, bent and glabrous at the base. *Perianth tube* 1.5 mm long, almost glabrous. *Claw* 2 mm long, densely pubescent, recurved 90°. *Limb* 1.5 mm long, densely pubescent. *Anthers* 1 mm long. *Abortive stigma* .8 mm long, clavate, minutely bifid, acts as a pollen presenter. *Style* 3.5 mm long, narrower and glabrous above, densely pubescent below. *Hypogynous scales* 1 mm long, acicular. *Receptacle* 4 mm diam, globose. *Pollen* triangular in polar view with sides .032 mm long, height of polar axis .02 mm. *Female Inflorescence* 14 mm long and 18 mm diam, solitary, terminal, globose. *Basal bracts* similar to the male but the innermost becoming broader. *Floral bracts* 5 mm long and 6.5 mm broad, broadly oval, apiculate, pubescent, long ciliate. *Floral bud* not seen. *Perianth tube* 4 mm long, pubescent above, glabrous and divided below. *Claw* 2 mm long, pubescent. *Limb* 1 mm long, pubescent, *Staminode* .7 mm long. *Ovary* 1 mm long, ovoid, pubescent. *Style* 4 mm long, glabrous. *Stigma* .5 mm diam, truncate, terminal. *Hypogynous scales* 2 mm long, acicular. *Receptacle* 5 mm diam, globose. *Mature female head* a cone 17 mm diam, globose, pubescent, dehiscent. *Fruit* a nutlet 4.5 mm long, 3.5 mm broad, obovoid, sparsely short pubescent.

CAPE PROVINCE. Uniondale Division, Mannetjiesberg 6,400 ft; Esterhuysen 6474 (Holotype) (BOL), 6600 (BOL), Williams 697 (NBG), Rourke (383) NBG.

Leucadendron singulare was collected in November 1941 by Miss Elsie Esterhuysen of the Bolus Herbarium near and on the summit of Mannetjiesberg in the Kammanassie Mountains. Botany in South Africa and the Bolus Herbarium in particular owe a great debt to this intrepid botanist whose collections from the most remote and inaccessible mountains have revealed countless species new to science. This extremely rare species is found growing in T.M.S. soil in between rocks against which it shelters on the exposed mountain tops at an altitude of 6,400 ft above sea level. Flowering in October and pollinated by insects, the fruits are ripe in February after which they fall to the ground.

L. singulare differs so much from all its congeners that I have chosen an epithet so as to express this peculiarity. Although the male looks very like a dwarf form of *L. album* (Thunb.) Fourcade (= *L. aurantiacum* Buek ex Meisn.) yet the female is vastly different with very much smaller leaves and perianth segments. There is a certain similarity with the heads of *L. sorocephalodes* Phill. & Hutch., but again the foliage is quite dis-similar; *L. sorocephalodes* having small glabrous subulate leaves. Any resemblance to *L. nitidum* Buek. ex Meisn. or to *L. sericeum* (Thunb.) R. Br. is purely superficial as these two species are basically so different from all other *Leucadendrons* as, almost to merit a separate generic name, having no hypogynous scales in the male and smooth oblong keeled fruits.

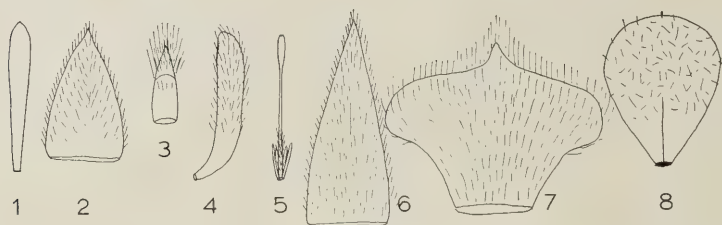


FIG. 4. *L. singulare*.

1. a leaf $\times 1.5$.
2. a male basal bract $\times 5$.
3. a male floral bract $\times 5$.
4. a male floral bud $\times 5$.

5. a male abortive pistil with hypogynous scales $\times 5$.
6. a female basal bract $\times 5$.
7. a female floral bract $\times 5$.
8. a fruit $\times 5$.